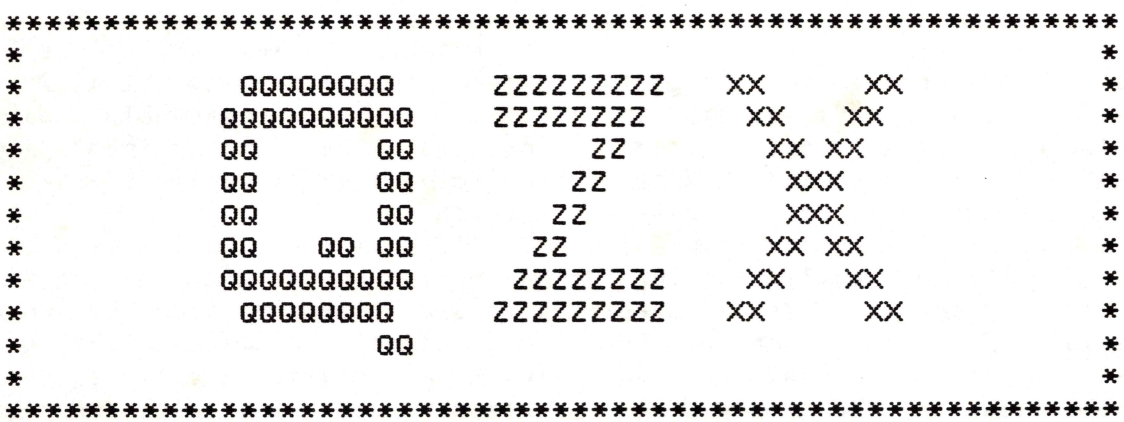
QQQQQQQ ZZZZZZZZZ XX XX
QQQQQQQQQ ZZZZZZZZ XX XX
QQ QQ ZZ XX XX
QQ QQ ZZ XXX
QQ QQ ZZ XXX
QQ QQ QQ ZZ XX XX
QQQQQQQQQ ZZZZZZZZ XX XX
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QQ

The Journal Covering Amateur Radio & Sinclair Computers
ZX-80; Micro-Ace; ZX81; T/S 1000, 1500, & 2068; QL
Alex. F. Burr, K5XY, Publisher
2025 O'Donnell Drive
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* PUBLISHER'S NOTES -
* PC-DRAW, A REVEIW K5XY
* QL ARCHIVE HAM LOG PROGRAM WA6DLI
* T/S 2068 COLOR MONITOR DIFFICULTIES K5XY
* BITS AND BYTES
* COMPUTERFACT 81, A REVIEW K5XY
* UNCLASSIFIED ADS
* QZX FRIENDS

PUBLISHER'S NOTES
K5XY

You will notice that the longest running series of advertisements in QZX no longer appears in this issue. As far as QZX can determine Quantum Computing has gone out of business. Several attempts to reach the company or any of the known people involved with the company have been unsuccessful. Furthermore, one of our prominent subscribers sent in an order, some time ago, for a disk drive set. Since then he has not received the disk drive, his money returned, nor any answer to mail or telephone calls. His latest attempt, by certified letter, was returned marked "unclaimed". It would appear that an attempt to do business with this company by mail now would be unwise.

The Timex computers keep on coming. I recently saw an advertisement from Pekao Trading Corporation, a Polish company which was offering the T/S 2048, a computer similar to the T/S 2068, for $146.00. It was also reported that Timex is actually still selling the T/S 1000, but only to OEM companies for use as a controller.

The Dayton hamfest was a potent source of interesting equipment as usual. It was reported that one ham got a T/S 1000 board for $0.50 and that you could get brand new T/S 1500's with new 2040 printers for $45.

The cartoon which appears in this issue was drawn especially for QZX by LU1MNI, the son of LU8MAD. In the next issue we will have another article by LU8MAD.

PC-DRAW, A REVIEW
K5XY

Here is a fine inexpensive commercial program for the T/S 2068. PC-Draw is a T/S 2068 and Spectrum program designed to aid in the production of printed circuit boards. Under joystick control or keyboard control, this mostly machine code program generates PC artwork and transmits it to an EPSOM RX 80, RX 100 or compatible printer. The result is camera ready drawings at a 2 to 1 scale. These remarkably detailed drawings can be photographed, providing a negative for circuit board etching.

PC-Draw is primarily menu driven. An on-screen menu and a variety of keyboard commands allow the operator to construct a drawing on the screen. The image is automatically scrolled as necessary up, down, left, and right to permit construction of drawings as wide as 13 1/2 inches. Length is limited to 20 inches. The artwork is stored in a unique compressed code which saves RAM space and is manipulated by a routine written in assembly language.

When a drawing has been created, it can be saved to tape for later use. This ability facilitates double sided pc boards by allowing a save of the pad layout before any lines have been added. This file can be loaded to begin work on side two. Available RAM precluded having both sides in memory at once, but registration of the two negatives is guaranteed by using a common pad layout. The user may easily modify the SAVE and LOAD routines to accommodate disks or micro-drives. The printing routine was written for EPSOM RX series and higher printers, and uses a high resolution graphics mode to fill in the spaces between firing pin dots. This process is slow, but results in very accurate, highly detailed drawings. The system also offers "quick-print" to produce drawings in one third the time which are suitable for proof reading and debugging. The print routine can also superimpose a grid upon the drawing to aid in making corrections and additions.

This program is not your typical back room product. It is well produced. The cassette comes packed in a custom plastic holder with a well prepared instruction book in a custom printed well fitting box. Obviously a lot of care had gone into the

production of the package. Even the corners of the instruction book had been trimmed off to provide a better fit to the box and to give it a distinctive look. The book is 28 pages long, clearly written, and completely covers the operation of the program. The print is just a bit hard to read as the spaces inside many letters on the master copy tended to fill in a bit.

The program itself is not a new program but is a debugged and enhanced version 3.0 of a program which has been around for a while. Some thought has obviously gone into adding those little touches which make the program easier to use but which are tedious and difficult for the programer to add. For instance sound is discreetly used identify keystrokes, and the color of the boarder around the workspace is keyed to the mode of operation. The amount of free memory left is continuously displayed on the screen. Furthermore, when this amount becomes less that 1000 bytes, the number starts flashing to warn of the coming memory shortage.

The tape which is supplied has a T/S 2068 version on one side and a Spectrum version on the other. The programs are essentially the same. It takes about three minutes to load. The first time it is loaded one has to answer some questions about your printer interface. Then the program automatically gives you the opportunity to make a customized copy which you use from then on.

The program covers the work area with an invisible grid which converts into 1/20 inch spacing on the completed pc board. A particular intersection on this grid is selected by moving large crosshairs on the screen. The coordinates of the crosshairs are indicated in the lower right hand corner of the screen. The crosshairs identify the point on the work area at which something is placed.

These somethings are one of seven differently shaped pads, the pads for any size of ic socket, a string of pads of any length, or the end of a pc trace. For example, to place a the pads for an ic socket on the screen you locate with the crosshairs the position at which you wish to place pin 1 of the socket. Then you select the orientation of the socket, the number of pins for the socket and the spacing between the rows of pins and push the firing button. Shortly the ordered pads appear on the screen. To draw lines you fire on the beginning and end locations and the program does the rest.

Parts of the drawing can be moved to other places in the work area, the drawing can be split in several ways so that additions can be made in the middle, and there is even a fine tuning mode in which individual pixels can be turned on or off. Lines can be made easily in three different widths.

The program is a pc draw program not a pc design program. You have to decide just where every pad and every line must go, but it is easy to learn how to place these elements just where you want them to go.

The program is not fool proof. If you have ever done any programming, you know that it is one thing to get a program to respond to the proper key inputs, but it is quite another to make it impervious to incorrect inputs. Error checking consumes a lot of time and memory. In order to save as much memory as possible for the data file, error checking has been reduced to a minimum. When inputting commands to the system, the operator must be responsible to observe the syntax exactly, to be sure of the spelling, and to use only lower case letters. Do not set a printer width less than 32. The right margin is advanced in 5 character increments. If you specify a print width of 80, it will be rounded up to 82. Avoid using the last two columns as they will not be printed. Scrolling becomes noticably slower as the memory fills up. Furthermore if you overflow the memory the program WILL crash.

The program is simple to learn, easy to use, and does produce good art work.

The authors do not want to deal with the hassle of selling to individual buyers so the program is only available through dealers. If you have difficulty finding a dealer, write to QZX and we will see what we can do.

QL ARCHIVE HAM LOG PROGRAM
WA6DLI

The Archive program comes with your QL, perhaps labeled as QLDB for QL Database as Sinclair Research USA had some problem with the Psion trademarks being used in this country.

Archive is perhaps the best program in the set and most usable after the Quill Word Processor and Abacus Spreadsheet. It causes fits for most users as it is not a working program like Quill, Abacus, and Easel; but is a kit to make a database to your specifications. It is like they gave you lumber, bricks, mortar, nails, glass, wire, to build a house instead of a house. Most people try to live in the house before it is built and have trouble getting Archive to do anything. If you do not have a specific book on Archive, and can not fathom the QL User Guide, then perhaps Mike do Sosa's book, "Taking the Quantum Leap" sold by Time Designs Magazine in Colton. OR is the best out. (see review in January 1988 QZX.)

Here is a short and sweet step by step way to make a ham log that will work; but if you want it to excel, you should read about Archive in a good reference and add more procedures.

First find the Psion Archive program in your set of microdrives that came with the QL. Back it up for a working copy if you have not done so and put that in drive 1. From the Sinclair QL logo screen press F1 if you have a monitor and F2 if you have a TV set. The boot program on the cartridge should load Archive.

When the Archive screen comes up (at this time it is very similar to the Quill screen but different commands appear in the top window), type the word "create" ENTER. The create will appear and ask for a title with the quote already provided. To be safe at this time type: mdv1_hamlog. This will go onto your mdv1 as a file and the program will then ask for variables. Since a log might start with a date type in: date$

This will automatically be listed and it will wait for the next entry. If the eventual entry for that title will be text then the variable must have a $ sign appended when you type the word. If it is going to be a pure number (integer) then just a word will do.

Now enter in any sequence the following suggested items or any you would prefer in a similar format:

```
freq
hh              (hour digits of UTC)
mm              (minutes of UTC)
call$           ($ for text)
qth$
handle$         (or name$)
address$        (if not in callbook)
country$
city$
county$
zone$           (zip or world zone)
sig             (RST you gave)
rpt             (RST you received)
rig$
ant$
note$
more$           (optional notes)
```

Now hit ENTER without typing a word and the program will write

```
end create
```

and file to mdv1 (if you had not put mdv1_ in the title, it would write to mdv2_, the default file media. You will find that this is now on your mdv1_ as a file called hamlog_dbf. If you have ICE it will make a cabinet icon on the desktop screen.

Now what you have done so far will work as a database hamlog. To prove it, enter the command, insert, and it will ask for an entry for each of the variables. If you fill in a log entry you will have something like figure 1. Do not forget to follow window instructions in any mode. e.g. when to press F5 or F4 etc.

Now you can fill in some more log entries and the database will search or find or go to first if you type first or last if you type last. With several entries, if you type find and then put a call between the quotes, it will find the file with that call.

Now the default format is not very sexy but is what comes up anytime "display" is typed as a command, even if you have designed a snazzy screen display. Let's make a nice display. You can be the artist. Press F4 to exit and F3 to be sure you are in command mode.

Now type the command: sedit (for screen edit)

You will get the variables now with dotted lines after them. Write down the variables so you know what you are going to rearrange, Press F3 and use the c for clear screen.

Now move the cursor to where you want something that will be the background or permanent labels of the file card. Select P for paper color, hit space bar to select color, and ENTER to fix it. Hit F3, I for ink, select with the spacebar a color, hit ENTER to fix it. Now type a title like: WA6DLI HAM LOG FOR 1988. it will be in the paper and ink you selected. If you are using a mono screen stick with black and white for colors but you can alternate for paper and ink.

Work around the screen designing a cards labels and permanent printed information, leaving space say after a colon for entries.

When this is done move the cursor to the right of each label that will have an entry and press F3 and V (for set variable). It will ask you to type in the variable. So if the label was DATE: follow it with "date$" hit ENTER and it then asks for box length. Move the dotted line with right pointing arrow, to length desired and hit ENTER. Do the same for each of the other variables you made a list of. Putting them on the card at the right label location.

When you are done hit F3 for command and enter:

ssave ENTER "mdv1_log"

This will save to mdv1 a screen design called log_scr.

After this hit F3 and enter quit. (It is important to use close or quit in Archive or you may never open a file again if you left the program without closing files.

Now from scratch, load the boot for Archive, when the screen comes up type: sload ENTER (this makes quotes to fill in.) Now type: mdv1_log (it will go automatically between the quotes.) Hit ENTER and your screen should load but will be blank where the data is, although the labels and text should be there.

Now type: open ENTER (makes quotes again to fill in).
Type: mdv1_hamlog and the spaces should fill with you sample entries.

From the F3 command position you can use insert to make new entries, or alter to change any entries showing. You can now try making a number of cards from you ham log or make believe and play with manipulating them with first, last, find, alter, etc. your funal result will look like figure 2 in some way. When I printed this out with a screen dump, my main title BOB HOWARD'S HAM LOG FOR 1988 did not show because it was green ink on a red field and to the printer those were the same color - white.

You can make a working log with just what I have told you and this may make you get over the fear of trying to use Archive and you will read more and find how powerful it is. I am working on my music recordings file right now!

The above is designed to use one microdrive cartridge. If you want to use two, with drive 2 being the files cartridge leave off the designations mdv1_ and the program will select drive 2 for saving automatically and look there for files. If you have a floppy system with Toolkit II, type flp_use mdv and proceed using mdv calls and the floppies will pretend that they are microdrives. (This saves editing programs that call mdv2_ !)

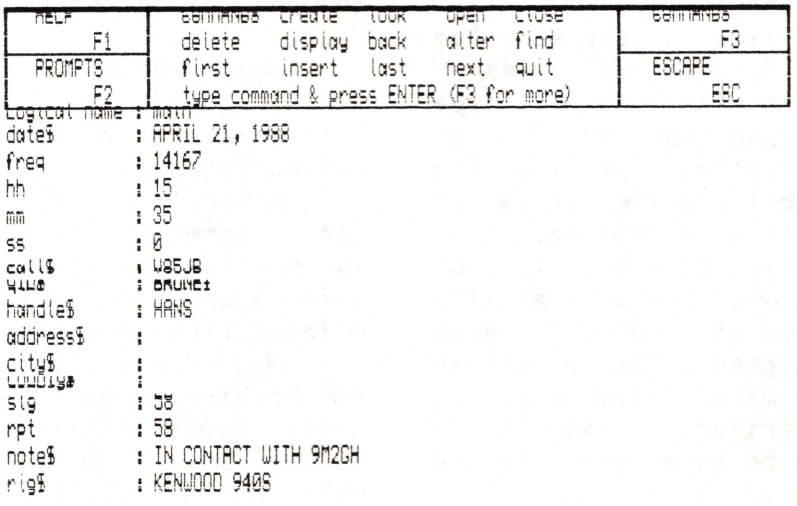

FIGURE 1 Default Report Form for Ham Log

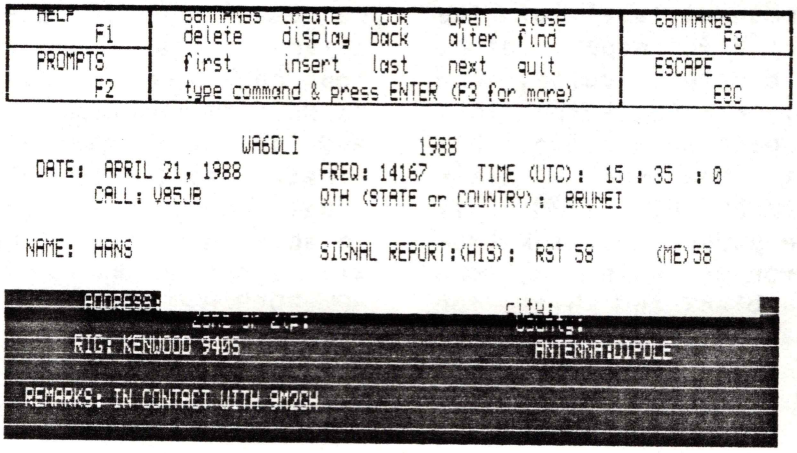
HELP F1
delete display back alter find
PROMPTS F2
first insert last next quit
ESCAPE ESC
type command & press ENTER (F3 for more)
WA6DLI 1988
DATE: APRIL 21, 1988 FREQ: 14167 TIME (UTC): 15 : 35 : 0
CALL: V85JB QTH (STATE or COUNTRY): BRUNEI
NAME: HANS SIGNAL REPORT:(HIS): RST 58 (ME)58
RIG: KENWOOD 940S
REMARKS: IN CONTACT WITH 9M2GH

FIGURE 2 Custom Designed Screen for Ham Log

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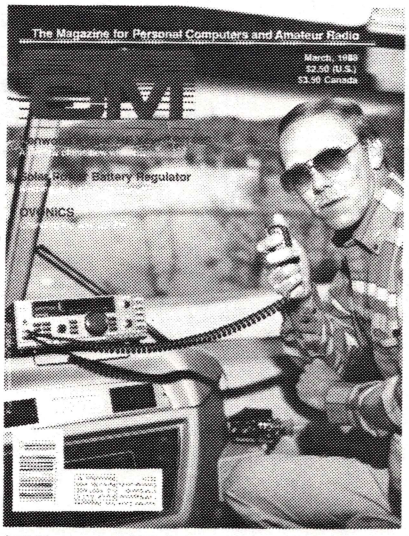

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T/S 2068 COLOR MONITOR DIFFICULTIES

K5XY

Some hams have difficulty using some color monitors with the T/S 2068. There are very good reasons for these difficulties. If the usual standards are not followed, less than perfect quality results. The trouble is deciding what are the usual standards when you are trying to build a computer which can be used any place in the world.

Timex had to work hard to adapt the TV output of the Spectrum to the US broadcast standards for use on our TV sets. The adaptation was not perfect.

The following table shows the angles at which the color vectors are produced by the T/S 2068 and the angles which are desired by the usual US TV set.

COMPOSITE VIDEO VECTOR ANGLES

PHASE	T/S 2068 degrees	NTSC STANDARD degrees
Blue	350	350
Magenta	64	62
Red	116	112
Green	242	240
Cyan	284	284
Yellow	170	170
Reference	224	180

There are also three other difficulties which cause some monitors to give less than perfect performance.

1. Color bust sychronization. The color burst is not synchronous with the waveform because it is generated from the 3.579545 MHz crystal and the waveform is derived from the 14.112 MHZ crystal. The result is observed as ripples at color boundaries such as green to magenta.

2. Color burst duration. The color burst duration on the T/S 2068 is 8 cycles while standard TV broadcast stations provide 9 cycles. This short burst is a problem for some monitors.

3. Color burst timing. The color burst starts 6.4 microseconds from the leading edge of the sync pulse. Many monitors are designed to expect this start as early as 5.3 microseconds, thus these monitors may not produce color when attached to the T/S 2068.

I hope this information is helpful to those who are having monitor problems with the T/S 2068.

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Call or write for a free catalog of products for the Timex Computer

BITS AND BYTES

125 Warning. Do not use WD 40 or similar solvents to extend the life of your printer ribbon. It will do that all right; but at the expense of shortened life for your much more expensive printer head, which tends to get clogged up.

126 There is a bug in the ON ERR GOTO routine in the T/S 2068. If a non-existent line number is specified, followed by an error, the system will hang. The ROM code is in an endless loop trying to report the absence of a valid error handler to the non-existent error handler! On some errors, you will get an unexpected 0 OK termination showing the line number of your Error Handler. This is because some ROM routines temporarily clear the INTPT Flag (bit 7 of FLAGS). This flag is set to 0 when checking syntax and set to 1 when executing. If an error is detected while the Flag = 0, the error handler code is branched to but is not executed.

127 RENUMBER in SuperBASIC on the QL makes no attempt to renumber RESTORE statements.

128 The PC8300 is not a ZX 81 clone. The ROM is significantly different so that no program which makes a ROM call will work. Also it is missing the ? and ' as well as the #, %, @, and &.

COMPUTERFACT 81, A REVIEW
K5XY

Most electronics people are familiar with the series of information folders on television equipment known as Sams Photofacts. Fewer people know about the similar series known as Computerfacts. But the series does exist, and it covers over 100 collections of information on computers and peripheral equipment. Included in that number are some of our computers.

The packet on the ZX 81 and the T/S 1000 is typical, although smaller than average, as is the computer. It does contain a lot of information, though. The one on the ZX 81 contains 13 pages plus a large sheet printed on both sides of preliminary checks. The Computerfact package does not contain just a group of factory service hints but is the result of independent investigation by the Sams organization.

The preliminary service checks starts off with a short description of the IC's involved. Next comes a large sheet containing a greatly simplified component placement diagram and a series of step-by-step service checks designed to localize the trouble. There is even a section on gereral operating instructions and, on the back, a 1/2 size photograph of the main circuit board with the preliminary test points identified. Disassembly instructions are also given.

The Computerfact booklet itself starts off with a large (32 inch by 11 inch) circuit diagram. It is not just the factory provided circuit as has been published in QZX before, but a completely redrawn diagram done in the usual clear Photofact style. Of particular help are the many places where voltage readings are given. These readings, particularly the ones on all the pins of all the transistors (2), are a great help when troubleshooting. At six different points on the diagram little pictures are inserted which show the waveforms which can be expected if an oscilloscope is connected there.

Next comes outline drawings with pin identifications for all the IC's and transistors. The following pages provide a photograph of the main circuit board covered with a locator grid. A parts list is next. A logic chart showing the logic level at every pin of each IC is included. A really useful and informative half page troubleshooting guide is included.

A lot of effort has gone into collecting this information and presenting it in an easy to use manner. The one and two IC RAM variations are shown. Even a special variation for the model designed for French use is shown.

It is clear that all this information is put into a standard format designed for larger computers. Hence there is quite a bit of general information on such irrelevancies as three prong power plugs, isolation transformers, and floppy disk drives.

The cost of just under $20 is quite a bit considering the current price of these computers. Furthermore the simplicity of the circuit leaves much of the advice such as "check IC 1 (the special Sinclair Logic chip) by substitution" of doubtful utility. However if you want the maximum information about the electrical workings of your computer, here is the place to get it.

Computerfacts CC14, Sinclair/Timex Models ZX81/TS1000, 15+ pages, Howard W. Sams and Co., 4300 West 62nd St, Indianapolis, IN 46206, $19.95. Also available on special order from your local Radio Shack store.

UNCLASSIFIED ADS

WANTED: UNCLASSIFIED ADS for publication in QZX. Cost is 1 cent for each keystroke (characters, blanks, etc.). Payment must be included with order. This is an excellent way to sell your program or unwanted equipment, ask for help, or find a specific program. Send your ad with payment to QZK, 2025 O'Donnell, Las Cruces, NM 88001.

FOR SALE: Index to QZX consisting of a book of xerox copies of all the covers since December 1982. Send $5.00 plus $1.00 shipping and handling ($2.00 if to a non-US address) to QZX, 2025 O'Donnell, Las Cruces, NM 88001.

FOR SALE: Book Inside CP/M Plus by D. E. Cortesi. Paperback 260 pages. Originally $18.45 now $9.00 postpaid in US. Very good for QL users with CP/M. Alex. F. Burr, K5XY, 2025 O'Donnell, Las Cruces, NM 88001.

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This Timex/Sinclair equipment needs a good home with somebody who will use it themself. One item will be sent to the first reader who requests a specific item (second choice allowed), encloses shipping money, promises to write something for QZX about its use, and encloses a self-addressed stamped envelope for use in case the equipment is gone before the request makes it here. Bo Barry, W4GHV, 8118 Kensington Lane, Harrisberg, NC 28075.

FOR SALE: Book Easy-up Antennas for Radio Listeners and Hams by Edward Noll. Paperback (1988) 162 pages. Originally $16.95, now $11.00 postpaid in the US. A Sams publication. The title says it all. Alex. F. Burr, K5XY, 2025 O'Donnell, Las Cruces, NM 88001.

QZX FRIENDS

W9CQD -- Russ, an original subscriber, says that he is faced with a dilemma, which he thinks other subscribers are facing too, in that while learning about computers he obtained a ZX 80, ZX81, T/S 1000, and T/S 2068 but has now gone on to other types. He finds less time to work with his Sincalir computers and less for them to do. He even continues his subscription to QZX partly for sentimental reasons. He said the early days of the Sincalir market were pretty exciting. More importantly he said that if there was sufficient interest, he would be glad to try to resurrect a Sinclair net in Illinois and surrounding area. If interested write to him. Also of interest is that fact that he sent me a FIDO message about his subscription. I sent him a FIDO message back. It took me half the time to write the computer message compared to a full letter. The FIDO message cost less to send than a letter too. Of course, Russ did not get the fancy QZX letter head. (Somehow I do not think he missed that.)

W6OOA -- A.L. sent an encouraging card. He is mainly involved with a T/S 1000 on cw with PARG (Pacific Amateur Radio Guild).

WB8KON -- Bruce says that he will be back on the air with his ZX81 and T/S 1000 as soon as he gets his antenna back up again. His sheep dog keeps running into it and knocking it down.

WA4BQE -- Ed went to the Dayton Hamfest and got a couple of T/S 1000 programs which he had not seen before.

73, K5XY

QZX presents the best software & hardware projects available for the radio amateur. While the contents are believed to be accurate, no warranty is extended on any program or project. No investigation has been made of the claims or reputation of any advertiser. It would be greatly appreciated if all correspondence requiring an answer would be accompanied by a self-addressed stamped envelope (SASE). Copyright by QZX, 1988. All righs reserved, photocopying by permission only.

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